

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 June 2002 (20.06.2002)

PCT

(10) International Publication Number
WO 02/47555 A2

(51) International Patent Classification⁷: **A61B 17/00**

(74) Agent: **TRUTER, Kenneth, Colin**; Adams & Adams,
Adams & Adams Place, 1140 Prospect Street, Hatfield, P
O Box 1014 (ZA).

(21) International Application Number: PCT/IB01/02392

(22) International Filing Date:
11 December 2001 (11.12.2001)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
ZA, ZW.

(25) Filing Language: English

(26) Publication Language: English

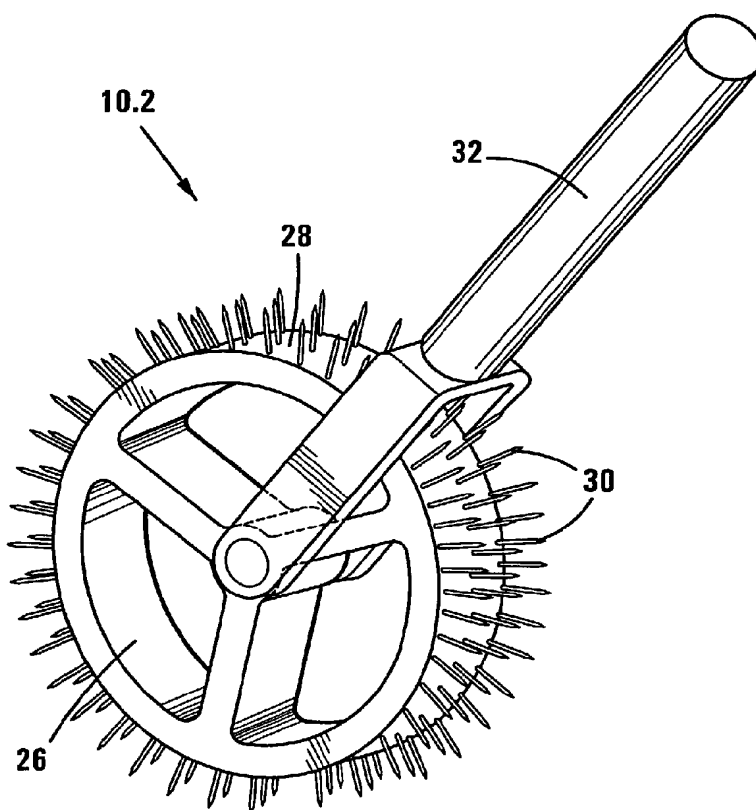
(30) Priority Data:
00/7409 12 December 2000 (12.12.2000) ZA

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,

(71) Applicant and
(72) Inventor: **FERNANDES, Desmond, Brian** [ZA/ZA]; 6
Avenue Disandt, 8001 FRESNAYE (ZA).

[Continued on next page]

(54) Title: A DEVICE AND METHOD FOR TREATING THE SKIN OF A SUBJECT



(57) Abstract: The invention provides a device 10 for treating the skin of a subject, the device 10 including a head 26 defining a convex head surface 28, and a plurality of spaced pins 30 set in the head 26 and protruding a predetermined distance from the head surface 28. The invention also provides a method of treating the skin of a subject by pressing the device 10 onto the skin of the subject with sufficient force for the pins 30 to prick the epidermis of the subject, leaving minute clefts in the epidermis. The device 10 may be pressed onto the skin of the subject with sufficient force for the pins 30 to reach into the upper dermis of the subject, leaving minute clefts in the upper dermis. The device 10 and method of the invention allows surgeons to offer subjects a skin treatment that is effective in rejuvenation.



WO 02/47555 A2



CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *entirely in electronic form (except for this front page) and available upon request from the International Bureau*

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A DEVICE AND METHOD FOR TREATING THE SKIN OF A SUBJECT

THIS INVENTION relates to treatment of a subject's skin. More particularly, it relates to a device and to a method for treating the skin of a subject.

According to a first aspect of the invention there is provided a device
5 for treating the skin of a subject, the device including a head defining a convex head surface, and a plurality of spaced pins set in the head and protruding a predetermined distance from the head surface.

In one form of the invention the head surface may be cylindrical, in which event the head may be in the form of a rotatable wheel.

10 The head may be of a plastics material and the pins may be of stainless steel.

The pins may protrude from the head surface by such a distance that, when the device is pressed on the skin of a subject with sufficient force, the pins prick the epidermis, leaving minute clefts in the epidermis. The pins may protrude by such a
15 distance that they prick the epidermis and reach into the upper dermis, leaving minute clefts in the upper dermis.

The pins may protrude from the head surface by about 0,1mm or by about 2mm, and may be spaced about 3mm to about 5mm apart in a direction of curvature of the head surface, and about 2mm apart in a transverse direction on the head surface.

-2-

According to a second aspect of the invention, there is provided a method for treating the skin of a subject by pressing a device as described hereinabove onto the skin of the subject with sufficient force for the pins, to prick the epidermis of the subject, leaving minute clefts in the epidermis.

- 5 The device may be pressed onto the skin of the subject with sufficient force for the pins to reach into the upper dermis of the subject, leaving minute clefts in the upper dermis.

- 10 The invention may include the further step of topical application of a preparation to the skin of the subject, the clefts made by the pins assisting active ingredients of the preparation to penetrate the skin. The active ingredients may be selected from medications, vitamins, nutrients, etc., e.g. vitamins A and C.

The number of clefts made in the subject's skin may be about 50 to 100 clefts per square centimetre of the subject's skin.

- 15 The resulting slight damage to the upper dermis may be sufficient to cause a normal physiological reaction to trauma. Thus, the subject's body may produce collagen and also elastin which develops over a period of several weeks. Because the damage amounts to minute pin pricks, it heals rapidly even though hundreds or thousands of pricks may have been made in the skin. In other words, collagen production is promoted and the skin becomes tighter, without the epidermis of the
20 skin being destroyed.

The invention will now be described in more detail, by way of example with reference to the accompanying drawings.

-3-

In the drawings:

Figure 1 illustrates a device in accordance with a first embodiment of the invention;

Figure 2 illustrates a device in accordance with a second embodiment of the invention; and

Figure 3 illustrates a section of a subject's skin which has been treated in accordance with the invention.

Referring to Figure 1 of the drawings, reference numeral 10.1 generally indicates a device for use in treating a human subject's skin, the device 10.1 including a head 20 having a convex head surface 22 and a plurality of stainless steel pins 24 set in the head 20 and protruding a predetermined distance from the head surface 22. The head 20 is conveniently an injection moulded plastics item.

The distance by which the pins 24 protrude from the head surface 22 can be between about 0,05mm and 4mm. Preferable, the pins 24 protrude from the head surface 22 by about 0,1mm or by about 2mm. If the distance is too long, there is the risk of scar formation. The preferred spacing between the pins is about 3mm to 5mm in the direction of curvature of the head surface, and about 2mm in the transverse direction. The pins may have a thickness of about 0,6 mm at the head surface and taper to a sharp point.

Referring to Figure 2 of the drawings, reference numeral 10.2 generally indicates a device which comprises a head 26 which is in the form of a spoked wheel having a cylindrical head surface 28, and a plurality of stainless steel pins 30 set in the head 26 and protruding a predetermined distance from the head

-4-

surface. The head 26 is mounted rotatably on a handle 32. The head 26 may be assembled from a number of arcuately shaped elements such as the one illustrated in Figure 1 of the drawings.

The device 10 described herein may be of a disposable or use-once, throw-away nature.

Referring to Figure 3 of the drawings, a section of a subject's skin 40 is shown, which has been treated by pressing a device 10 as shown in Figures 1 and 2 of the drawings, onto the skin 40 of the subject, with sufficient force for the pins 24, 30 to prick the epidermis 42 and the upper dermis 44 of the skin 40, leaving minute clefts 46 in the epidermis 42 and the upper dermis 44.

After the skin 40 has been treated by pressing the device 10 onto the skin 40, a preparation including active ingredients selected from medications, vitamins, nutrients, etc., is topically applied to the skin 40. The preparation may specifically include effective amounts of vitamins A and C to have a rejuvenating effect on the subject's skin 40. The clefts 46 made by the pins 24, 30 assist active ingredients of the preparation to penetrate the skin 40.

The clefts in the upper dermis causes a normal physiological reaction to trauma and the subject's body produces collagen and elastin, resulting in the skin of the subject becoming tighter.

The invention illustrated allows surgeons safely to offer subjects a new skin treatment that is effective in rejuvenation, as an alternative to laser resurfacing of the skin and the use of a tattooing gun. The method of pricking the

-5-

skin in accordance with the invention is more sterile than the use of the standard tattooing gun. The depth of penetration is also more accurate, and more consistent results with better collagen formation is achieved. The device may be sold as a disposable object, which could result in large scale production with economies of scale. The actual disposable parts of the device may be relatively small and capable of being incinerated, so as not to constitute a health hazard.

CLAIMS

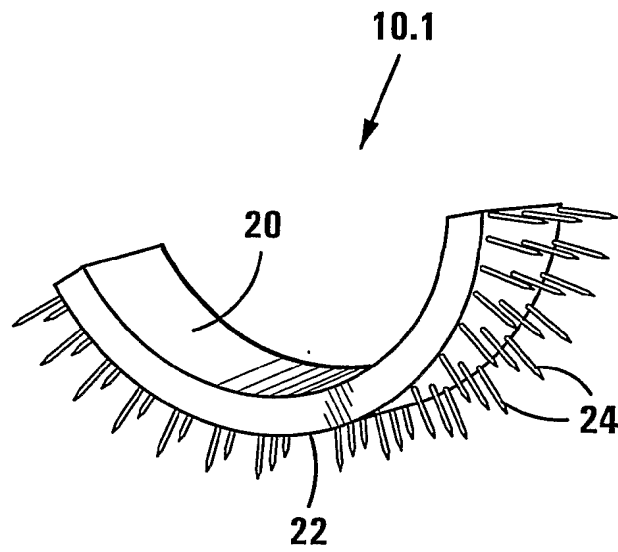
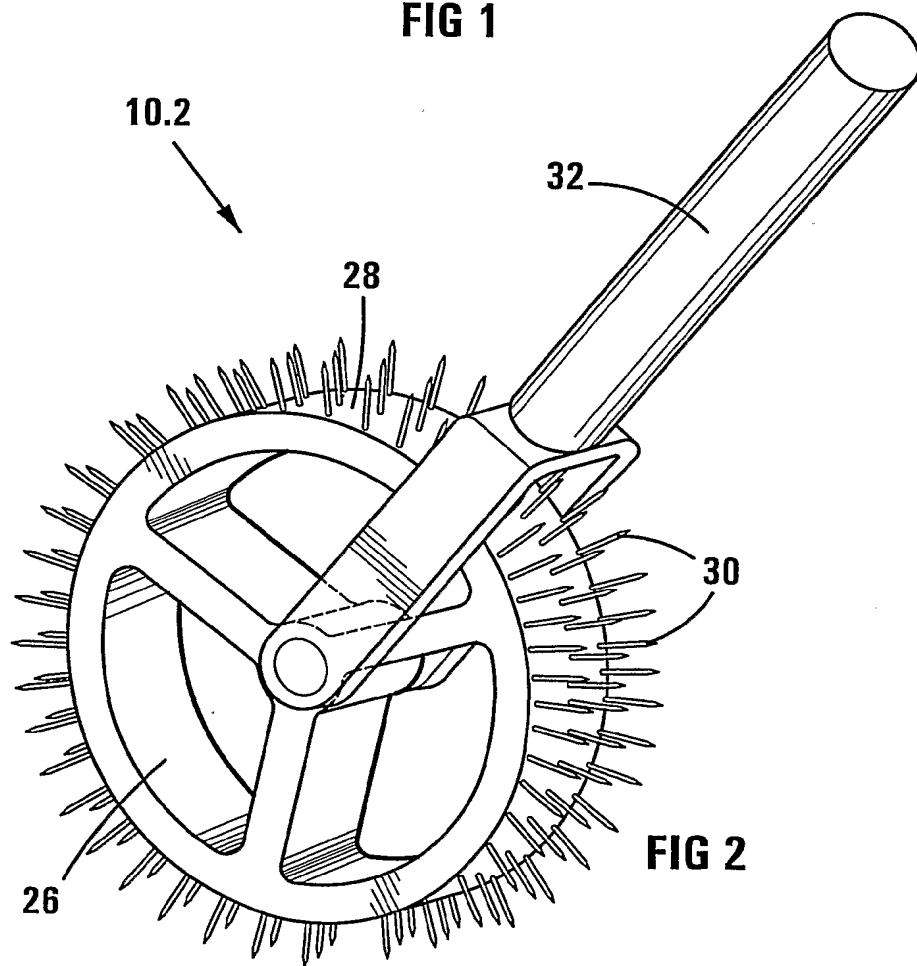
1. A device for treating the skin of a subject, the device including a head defining a convex head surface, characterised in that a plurality of spaced pins are set in the head and protrude a predetermined distance from the head surface.
2. A device as claimed in Claim 1, characterised in that the head surface is cylindrical and the head is in the form of a rotatable wheel.
3. A device as claimed in Claim 1 or Claim 2, characterised in that the head is of a plastics material.
4. A device as claimed in any one of the preceding claims, characterised in that the pins are of stainless steel.
5. A device as claimed in any one of the preceding claims, characterised in that the pins protrude from the head surface by such a distance that, when the device is pressed on the skin of a subject with sufficient force, the pins prick the epidermis, leaving minute clefts in the epidermis.
6. A device as claimed in Claim 5, characterised in that the pins protrude from the head surface by such a degree that, when the device is pressed on the skin of a subject with sufficient force, the pins prick the epidermis and reach into the upper dermis, leaving minute clefts in the upper dermis.
7. A device as claimed in Claim 5, characterised in that the pins protrude from the head surface by about 0,1mm.

-7-

8. A device as claimed in Claim 6, characterised in that the pins protrude from the head surface by about 2mm.
9. A device as claimed in Claim 7, characterised in that the pins are spaced 2mm to 5mm apart in a direction of curvature of the head surface.
10. A device as claimed in Claim 9, characterised in that the pins are spaced 3mm to 5mm apart in a direction of curvature of the head surface, and are spaced about 2mm apart in a transverse direction on the head surface.
11. A method for treating the skin of a subject, characterised by pressing a device as claimed in any one of Claims 1 to 10 onto the skin of the subject with sufficient force for the pins to prick the epidermis of the subject, leaving minute clefts in the epidermis.
12. A method as claimed in Claim 11, characterised in that the device is pressed onto the skin of the subject with sufficient force for the pins to reach into the upper dermis of the subject, leaving minute clefts in the upper dermis.
13. A method as claimed in Claim 12, characterised in that the clefts in the epidermis and upper dermis causes the subject's body to produce collagen and elastin, resulting in the skin of the subject becoming tighter.
14. A method as claimed in Claim 11 or Claim 12, characterised by the further step of topical application of a preparation to the skin of the subject, the clefts made by the pins assisting active ingredients of the preparation to penetrate the skin.

-8-

15. A method as claimed in Claim 14, wherein the active ingredients are selected from medications, vitamins, and nutrients.
16. A method as claimed in Claim 11 or Claim 12, wherein about 50 to 100 clefts are made per square centimetre of the subject's skin.
17. A device as claimed in Claim 1, substantially as herein described and illustrated.
18. A method as claimed in Claim 11, substantially as herein described and illustrated.
19. A new device, or a new method, substantially as herein described.

**FIG 1****FIG 2**

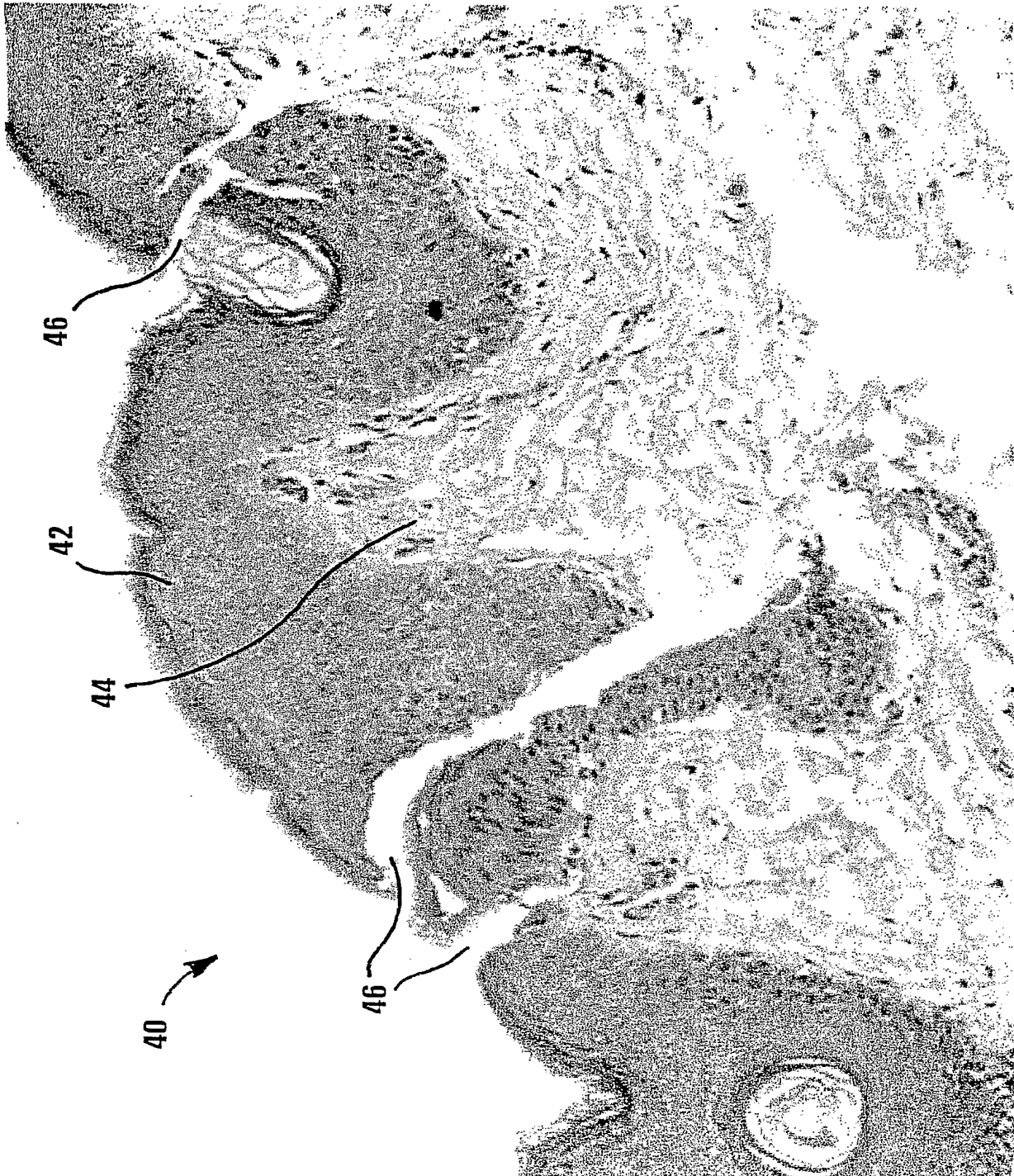


FIG 3